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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,409	03/26/2004	Toru Tojo	251154US2SRDX	7571
22850	7590	06/01/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			AKANBI, ISIAKA O	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/809,409	Applicant(s) TOJO ET AL.	
	Examiner Isiaka O. Akanbi	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-21 is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-11, 14-15 and 16 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11 May 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement file 26 March 2004 and 11 May 2006 has been entered and reference considered by the examiner.

Drawings

The examiner approves the drawings filed 26 March 2004.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 6, 8-10,14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Murakami et al. (5,017,798).

As regard to claim 1, Murakami discloses a pattern inspection apparatus to inspect defects of a substrate comprising of the following:

an illumination optics (11/12/13/14/15) which applies a first inspection light of a predetermined wavelength to a surface opposite to a pattern formed surface of the substrate (18), and applies a second inspection light whose wavelength equal the predetermined wavelength of the first inspection light to the pattern formed surface (figs. 1 and 5), a detector (16/17) which selectively detects a transmitted light from the substrate by irradiation of the first inspection light and a reflected light from the substrate by irradiation of the second inspection light so as to perform a transmitted-light-based inspection and a reflected-light-based inspection and a space separation mechanism (14/15) which is provided in the vicinity of an optical focal plane toward the pattern formed surface of the substrate, and spatially separates an irradiation area of the first and the second inspection light such that the transmitted light and the reflected

light from the substrate are imaged in two discrete areas separated on the optical focal plane (col. 1, line 57-col. 2, line 36).

As to claims 2 and 10, according to claims 1 and 9, Murakami discloses a first detection optics (7a/7b) which leads the transmitted light separated by the space separation mechanism to the detector and a second detection optics which leads the reflected light separated by the space separation mechanism to the detector (figs. 3 and 5)(col. 5, line 30-39).

As to claims 6 and 14, Murakami discloses wherein the optical focal plane toward the pattern formed surface of the substrate at least a magnification focal plane of an observation field observed in the pattern formed surface, and a mirror (14/15) is used as the space separation mechanism, and the mirror is fixed at a position offset from the optical focal plane (figs. 1 and 5).

As to claims 8 and 16, Murakami discloses wherein the illumination optics has a single light source (10/1)(figs. 3 and 5)

As regard to claim 9, Murakami discloses a pattern inspection apparatus to inspect pattern defects of a substrate comprising of the following:

a first illumination optics (14/15) which applies a first inspection light of a predetermined wavelength to a surface opposite to a pattern formed surface of the substrate, a first detection sensor (16/17) which detects a transmitted light from the substrate by irradiation of the first inspection light, for a transmitted-light-based inspection, a second illumination optics (14/15) which applies a second inspection light whose wavelength is equal to the predetermined wavelength of the first inspection light to the pattern formed surface of the substrate, a second detection sensor (16/17) which detects a reflected light from the substrate by irradiation of the second inspection light, for a reflected-light-based inspection and a space separation mechanism (14/15) which is provided in the vicinity of an optical focal plane between the pattern formed surface of the substrate (18) and the first and the second detection sensor, and separates the transmitted light and the reflected light from the substrate such that the transmitted light and the reflected light are imaged in two discrete areas separated on the optical focal plane (figs. 1 and 5)(col. 1, line 57-col. 2, line 36).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 7, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. (5,017,798)

Claims 3 and 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami, as applied to claims 2 and 10 above. The reference of Murakami teaches of the features of claim 2, comprising the first detection optics (7a/7b) and the second detection optics (7a/7b) that are independent, however the reference of Murakami is silent regarding the use of the first detection optics and the second detection optics to change a magnification for an observed image and change an illumination area of the illumination optics in accordance with the magnification thereof. The use of detection optics to change a magnification for an observed image is known as evident by Nikoonahad et al. (6,919,957 B2)(col. 160, claim 86). It would have been obvious to one having ordinary skill in the art at the time of invention to provide detection optics that change a magnification for an observed image for the purpose of detecting and determining a critical dimension of a micro defects or a macro defects on a front side of the specimen with accuracy.

Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami, as applied to claim 1 above. The reference of Murakami teaches of the features of claim 1, comprising supporting stage (not shown), photosensor (8a) or the like and other elements (Fig. 5)(col. 7, line 44-64), however the reference of Murakami is silent regarding an XY stage on which the substrate mounted and the type of sensor used as a detection sensor being (i.e. TDI sensor) and that number of accumulation steps of the TDI sensor for the transmitted-light-based inspection is different from that of the accumulation steps of the TDI sensor for the reflected-light-based inspection. There is no reason for the number accumulation steps of the sensor (i.e. TDI sensor) for the transmitted-light-based inspection and the accumulation steps of the sensor (i.e. TDI sensor) for the reflected-light-based inspection to be the same since they are independent of each other. The use of an XY stage on which the substrate is mounted to obtain a pattern image and a sensor (i.e. TDI sensor) is known as evident by Maeda et al. (6,556,290 B2). It would have been obvious to one having ordinary skill

in the art at the time of invention to provide an XY stage on which the substrate mounted and the number of accumulation steps of the TDI sensor for the transmitted-light-based inspection that is different from that of the accumulation steps of the TDI sensor for the reflected-light-based inspection for the purpose scanning, aligning and measuring with accuracy.

Allowable Subject Matter

Claims 17-21 are allowable

As to claim 17, the prior art of record, taken alone or in combination, fails to disclose or render obvious a polarizing beam splitter which is provided in the vicinity of an optical focal plane between the pattern formed surface of the substrate and the second detection sensor, and reflects or transmits the first and the second inspection light to send to the pattern formed surface of the substrate, and transmits or reflects the reflected light from the substrate to send to the second detection sensor. Claims 18-21 are allowable by virtue of their dependency on claim 17.

Claims 4-5 and 12-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 4, the prior art of record, taken alone or in combination, fails to disclose or render obvious illumination optics has a polarizing beam splitter provided between the pattern formed surface of the substrate and the space separation mechanism, and the polarizing beam splitter reflects the second inspection light to lead the second inspection light to the pattern formed surface of the substrate, and lets the transmitted light and the reflected light from the substrate pass through.

As to claim 5, the prior art of record, taken alone or in combination, fails to disclose or render obvious the illumination optics has a polarizing beam splitter provided between the space separation mechanism and the detector, and the polarizing beam splitter transmits or reflects the second inspection light to lead the second inspection light to the space separation

mechanism, and reflects or lets through the reflected light from the substrate obtained via the space separation mechanism to lead the reflected light to the detector

As to claim 12, the prior art of record, taken alone or in combination, fails to disclose or render obvious the second illumination optics has polarizing beam splitter provided between the pattern formed surface of the substrate and the space separation mechanism, and the polarizing beam splitter reflects the second inspection light to lead the second inspection light to the pattern formed surface of the substrate, and lets the transmitted light and the reflected light from the substrate pass through.

As to claim 13, the prior art of record, taken alone or in combination, fails to disclose or render obvious the second illumination optics has a polarizing beam splitter provided between the space separation mechanism and the second detection sensor, and the polarizing beam splitter transmits or reflects the second inspection light to lead the second inspection light to the space separation mechanism, and reflects or lets through the reflected light from the substrate obtained via the space separation mechanism lead the reflected light to the second detection Sensor.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art pattern inspection apparatus to inspect defects of a substrate that may anticipate or obviate the claims of the applicant's invention.

Conclusion

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

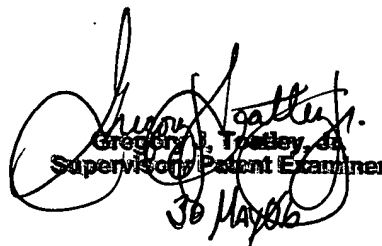
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2877

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi

May 26, 2006


Gregory J. Tolley, Jr.
Supervisory Patent Examiner
30 May 06